

### **REMARKS**

In the Office Action, the Examiner rejected claims 1-4 and 6-26. By this paper, the Applicants hereby amend claims 1, 11, and 17 and add two new dependent claims 27 and 28. These new claims do not add any new matter. Upon entry of the amendments, claims 1-4 and 6-28 will be pending in the present patent application. The Applicants respectfully request reconsideration and allowance of the pending claims in view of the foregoing amendments and the following remarks.

### **Rejections Under 35 U.S.C. § 103(a)**

In the Office Action, the Examiner rejected claims 1-4 and 6-26 under 35 U.S.C. § 103(a) as being unpatentable over Phillips (US Patent No. 6,792,399 B1, hereinafter “Phillips”) in view Henley (Patent No. EP1102187 A2, hereinafter “Henly”). The Applicants respectfully traverse these rejections in view of the foregoing amendments and the following remarks.

### ***Legal Precedent and Guidelines***

The pending claims must be given an interpretation that is reasonable and consistent with the *specification*. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969) (emphasis added); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); see also M.P.E.P. §§ 608.01(o) and 2111. Indeed, the specification is “the primary basis for construing the claims.” See *Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (*en banc*). One should rely *heavily* on the written description for guidance as to the meaning of the claims. See *id.*

Interpretation of the claims must also be consistent with the interpretation that *one of ordinary skill in the art* would reach. See *In re Cortright*, 165 F.3d 1353, 1359, 49

U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999); M.P.E.P. § 2111. “The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” *See Collegenet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 75 U.S.P.Q.2d 1733, 1738 (Fed. Cir. 2005) (quoting *Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1326). The Federal Circuit has made clear that derivation of a claim term must be based on “usage in the ordinary and accustomed meaning of the words amongst artisans of ordinary skill in the relevant art.” *See id.*

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d. 1430 (Fed. Cir. 1990). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). The Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). Moreover, a statement that the proposed modification would have been “well within the ordinary skill of the art” based on individual knowledge of the claimed elements cannot be relied upon to establish a *prima facie* case of obviousness without some *objective reason to combine* the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993); *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d.

1313, 1318 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d 1161 (Fed. Cir. 1999).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). The Federal Circuit has warned that the Examiner must not, "fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *In re Dembiczak*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)).

Non-analogous art cannot properly be pertinent prior art under 35 U.S.C. § 103. *In re Pagliaro*, 210 U.S.P.Q. 888, 892 (C.C.P.A. 1981). For the teachings of a reference to be prior art under 35 U.S.C. § 103, there must be some basis for concluding that the reference would have been considered by one skilled in the particular art working on the particular problem with which the invention pertains. *In re Horne*, 203 U.S.P.Q. 969, 971 (C.C.P.A. 1979). The determination of whether a reference is from a non-analogous art is set forth in a two-step test given in *Union Carbide Corp. v. American Can Co.*, 724 F.2d 1567, 220 U.S.P.Q. 584 (Fed. Cir. 1984). In *Union Carbide*, the court found that the first determination was whether "the reference is within the field of the inventor's endeavor." If it is not, one must proceed to the second step "to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved." In regard to the second step, *Bott v. Fourstar Corp.*, 218 U.S.P.Q. 358 (E.D.

Mich. 1983) determined that “analogous art is that field of art which a person of ordinary skill in the art would have been apt to refer in attempting to solve the problem solved by a proposed invention.” “To be relevant the area of art should be where one of ordinary skill in the art would be aware that similar problems exist.” *Id.*

***Improper Combination - Lack of Objective Evidence of Reasons to Modify/Combine***

The Examiner has not shown the requisite motivation or suggestion to modify or combine the cited references to reach the present claims. The Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). In the present rejection, the Examiner combined the cited references based on the *conclusory and subjective statement* that “[i]t would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because Henly’s prediction of properties of and optimization of plant’s output of products in combination with the prediction models and risk analyzer of Phillips would result in accurate prediction of the crude oil blend to be used (paragraph 0004 and 0012, Henly).” Office Action, page 6. Accordingly, Applicants challenge the Examiner to produce *objective evidence* of the requisite motivation or suggestion to combine the cited references, or remove the foregoing rejection under 35 U.S.C. § 103.

***Improper Combination – References Teach Different Principles of Operation.***

In addition, the cited references teach contrastingly different intended purposes and principles of operation, which would change if the cited references were hypothetically combined as suggested by the Examiner. As summarized above, a proposed modification or combination of references is entirely improper and insufficient to support a *prima facie* case of obviousness, where the proposed modification or

combination would change the principle of operation of the cited reference or render the cited reference unsatisfactory for its intended purpose.

The primary reference (Phillips) teaches a principle of operation of improved techniques for forecasting the values of variables, such as the price of a share of stock or a commodity. More specifically, the invention is directed to improved combination forecasting by using clusterization. *See Phillips*; col. 10, line 56 – col. 11, line 33; and col. 42, line 26 – col. 47, line 18. Thus, the principle of operation of the primary reference requires combining predictions of the value of a financial and/or economic measure that represents an aspect of an existing economic environment from a group of forecasters. *See id.* at FIG. 9; col. 30, line 60 – col. 32, lines 19. In other words, the primary reference combines the predictions of stock prices by various people/analysts to provide an average prediction of the stock price, thereby improving the predicting of the stock price.

In contrast, the secondary reference (Henly) teaches a principle of operation of prediction of the properties of and the optimization of a plant's output of products from a source or sources of raw material. More specifically, the reference relates to a process and method for increasing the predictability and profitability of operations where a series of raw materials are combined and processed into intermediate or final products by optimizing the cost structure of the raw materials, and the output of final or intermediate products to result in the lowest cost materials input and highest value production output. *See Henley*, page 6; paragraph 62. The reference also relates to the optimization of refining processes and petroleum blending operation to result in the highest value production output from available fuel stocks. *See id.* at page 6; paragraph 65. The reference also relates to the accurate prediction of final properties of a blended fuel utilizing non-linear optimization and property prediction. *See id.* at page 7; paragraph 70. Thus, the principle of operation of the secondary reference requires predicting a

characteristic of a product to be prepared by a processing plant by means of regressive analysis of an accumulation of data relating to a number of measured properties of the incoming material, the process of the plant and a number of characteristics of the product. *See id.* at page 16; paragraph 105.

In view of these contrasting different principles of operation, the Examiner's proposed combination of the primary and secondary references is absolutely improper and cannot stand. Any combination of the primary and secondary references would change the principle of operation of the primary reference to one of combining forecasts of financial and/or economic measure based on regressive analysis. In a similar manner, the proposed combination of the primary and secondary references would change the principle of operation of the secondary reference to one of predicting characteristics of a product to be prepared by a processing plant by means of cluster analysis of data relating to various characteristics of the materials and the product. In view of these incompatible principles of operation, the cited references cannot be combined and the Examiner's rejection is improper.

***Request Removal of Non-Analogous Art***

Based on the foregoing two-part non-analogous art test, the Phillips reference does not qualify as analogous art. In regard to the first step of the *Bott* test, the Phillips reference is directed to developing a technique for predicting a value of a financial and/or economic measure that represents an aspect of an existing economic environment. Therefore, the Phillips reference is not in the field of the Applicants endeavor. In regard to the second step of the *Bott* test, the Phillips reference is not pertinent to the problem addressed by the present patent application which is directed to a technique for refining crude oil and assessing and optimizing crude selection to assist oil refineries in assessing and selecting crudes and crude blends that are not of optimum quality. Thus, there is no evidence whatsoever that similar problems exist in these disparate fields of art.

Accordingly, the Phillips reference is believed to be non-analogous art. Applicants respectfully request the removal of the Phillips reference from consideration. For at least these reasons among others, the Applicants respectfully request withdrawal of the foregoing combination the corresponding rejections under 35 U.S.C. § 103.

***Features of Independent Claims 1, 11, and 17 Missing from References***

Specifically, amended independent claim 1 recites, *inter alia*, a system for assessing and optimizing crude selection comprising “a database storing data comprising crude characteristic data related to a plurality of different crudes or crude blends” and a predictive engine “configured to assess similarity of the crude characteristic data and the crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend.” Amended independent claim 11 recites, *inter alia* a method for assessing and optimizing crude selection comprising the steps of, “accessing a database for obtaining data comprising crude characteristic data related to a plurality of different stored crudes or crude blends” and “assessing similarity of the crude characteristic data and the crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend.” Amended independent claim 17 recites, *inter alia*, a computer readable medium storing a set of instructions configured for execution by at least one processor for performing the steps of “accessing a database for obtaining data comprising crude characteristic data related to a plurality of different stored crudes or crude blends” and “assessing similarity of the crude characteristic data and the crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend.”

Phillips fails to teach or suggest the foregoing feature of amended independent claims 1, 11, and 17. Phillips discloses a technique for forecasting the values of

variables, such as the price of a share of stock or commodity. In particular, Phillips discloses a technique for providing combination forecasts (obtained from a group of forecasters) for a value of a financial and/or economic measure that represents an aspect of an existing economic environment. However, such a technique for providing combination forecasts is not equivalent or even similar to a technique for storing data comprising crude characteristic data related to a plurality of different crudes or crude blends and assess similarity of the crude characteristic data and the crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend as recited by the present claims. Applicants have carefully reviewed the sections (column 8, lines 12-21 and 31-41; column 9, lines 34-44 and column 56, lines 47-56) referenced by the Examiner and submit that these sections fail to disclose the foregoing claim features.

The secondary reference of Henly fails to obviate the deficiencies in the teachings of Phillips. Henly discloses a process for the prediction and the optimization of the output of a plant producing products from incoming materials. Applicants have carefully reviewed the sections (paragraph 0004 and 0012) referenced by the Examiner and submit that these sections fail to disclose storing data comprising crude characteristic data related to a plurality of different crudes or crude blends and assessing similarity of the crude characteristic data and the crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend. Instead, these sections relate to a process and method for the prediction of the properties of and the optimization of a plant's output of products from a source or sources of raw material. For example, Henly specifically discloses that "the computing device will determine the accurate properties of the outcoming product and the optimum value to be extracted for a production run based on the available data." Henly, paragraph [0010] (emphasis added). By further example, Henly discloses one embodiment in which "a method is disclosed utilizing linear and non linear equations to

more accurately predict the cetane number, pour point, and/or other properties of the resulting fuel product.” Henly, paragraph [0011] (emphasis added). For at least this reason, among others, the hypothetical combination of Phillips and Henly cannot support a *prima facie* case of obviousness of the present claims.

In short, neither of the references teaches or suggests storing data to a plurality of different crudes or crude blends and assessing similarity of crude characteristic data and crude processing data of the plurality of different crudes or crude blends with input crude characteristic data and input crude processing data of the respective crude or crude blend to output statistical best matches with the data stored in the database. Consequently, no combination of the references could render such features obvious. In view of the above-noted distinctions, Applicants submit that claims 1, 11 and 17 are neither the same as, nor in any way taught or suggested by Phillips or Henly taken either alone or in hypothetical combination. In view of the foregoing deficiencies in the teachings of the prior art, the references cannot establish a *prima facie* case of obviousness of independent claims 1, 11 and 17. Accordingly, these claims are believed to be clearly patentable over the cited combination. Dependent claims 2-4 and 6-10, 12-16 and 18-22 depend from allowable independent claims 1, 11 and 17. Accordingly, these claims are believed to be clearly patentable over the cited combination by way of these dependencies and by way of additional features recited in each respective claim.

#### ***Features of Independent Claims 23 and 25 Missing from References***

Independent claim 23 recites, *inter alia*, a system comprising “a crude analyzer configured to compare a selected crude type and a selected refinery parameter with historical data comprising crude data related to a plurality of crude types and refinery data related to a plurality of refineries, wherein the crude analyzer is configured to identify one or more crude types and one or more refinery parameters in the historical data that are statistically similar to the selected crude type and the selected refinery parameter,

respectively”. Independent claim 25 recites, *inter alia* a method comprising the step of, “comparing a selected crude type and a selected refinery parameter with historical data comprising crude data related to a plurality of crude types and refinery data related to a plurality of refineries, wherein comparing a selected crude type and a selected refinery parameter comprises identifying one or more crude types and one or more refinery parameters in the historical data that are statistically similar to the selected crude type and the selected refinery parameter, respectively”.

Phillips fails to teach or suggest the foregoing feature of amended independent claims 23 and 25. Phillips discloses a technique for forecasting the values of variables, such as the price of a share of stock or commodity. In particular, Phillips discloses a technique for providing combination forecasts (obtained from a group of forecasters) for a value of a financial and/or economic measure that represents an aspect of an existing economic environment. However, such a technique for providing combination forecasts is not equivalent or even similar to a technique for compare a selected crude type and a selected refinery parameter with historical data comprising crude data related to a plurality of crude types and refinery data related to a plurality of refineries, wherein the crude analyzer is configured to identify one or more crude types and one or more refinery parameters in the historical data that are statistically similar to the selected crude type and the selected refinery parameter, as recited by the present claims. Applicants have carefully reviewed the sections (column 8, lines 12-21 and 31-41; column 9, lines 34-44 and column 56, lines 47-56) referenced by the Examiner and submit that these sections fail to disclose the foregoing claim features.

The secondary reference of Henly fails to obviate the deficiencies in the teachings of Phillips. Henly discloses a process for the prediction and the optimization of the output of a plant producing products from incoming materials. Applicants have carefully reviewed the sections (paragraph 0004 and 0012) referenced by the Examiner and submit

that these sections fail to disclose comparing a selected crude type and a selected refinery parameter with historical data comprising crude data related to a plurality of crude types and refinery data related to a plurality of refineries, wherein the crude analyzer is configured to identify one or more crude types and one or more refinery parameters in the historical data that are statistically similar to the selected crude type and the selected refinery parameter, respectively. Instead, these sections relate to a process and method for the prediction of the properties of and the optimization of a plant's output of products from a source or sources of raw material. For example, Henly specifically discloses that “the computing device will determine the accurate properties of the outcoming product and the optimum value to be extracted for a production run based on the available data.” Henly, paragraph [0010] (emphasis added). By further example, Henly discloses one embodiment in which “a method is disclosed utilizing linear and non linear equations to more accurately predict the cetane number, pour point, and/or other properties of the resulting fuel product.” Henly, paragraph [0011] (emphasis added). For at least this reason, among others, the hypothetical combination of Phillips and Henly cannot support a *prima facie* case of obviousness of the present claims.

In short, neither of the references teaches or suggests comparing a selected crude type and a selected refinery parameter with historical data comprising crude data related to a plurality of crude types and refinery data related to a plurality of refineries, wherein the crude analyzer is configured to identify one or more crude types and one or more refinery parameters in the historical data that are statistically similar to the selected crude type and the selected refinery parameter, respectively. Consequently, no combination of the references could render such features obvious. In view of the above-noted distinctions, Applicants submit that claims 23 and 25 are neither the same as, nor in any way taught or suggested by Phillips or Henly, taken either alone or in hypothetical combination. In view of the foregoing deficiencies in the teachings of the prior art, the references cannot establish a *prima facie* case of obviousness of independent claims 23

and 25. Accordingly, these claims are believed to be clearly patentable over the cited combination. Dependent claims 24 and 26 depend from allowable independent claims 23 and 25. Accordingly, these claims are believed to be clearly patentable over the cited combination by way of these dependencies and by way of additional features recited in each respective claim.

For these reasons, among others, the Applicants respectfully request withdrawal of the foregoing rejections under 35 U.S.C. § 103 in view of Phillips and Henly.

***Dependent claims 2, 12 and 18.***

Dependent claim 2 recites, *inter alia*, that “the predictive engine takes as input crude information corresponding to at least one crude slate and at least one refinery operating parameter and/or condition and uses desirability metrics to assess similarity of the input to data in the database”. Dependent claim 12 recites, *inter alia*, “taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition and using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend.” Dependent claim 18 recites, *inter alia*, “taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition and using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend.”

Phillips fails to teach or suggest the foregoing feature of dependent claims 2, 12, and 18. Phillips discloses a technique for forecasting the values of variables, such as the price of a share of stock or commodity. In particular, Phillips discloses a technique for providing combination forecasts (obtained from a group of forecasters) for a value of a financial and/or economic measure that represents an aspect of an existing economic environment. Applicants have carefully reviewed the sections (column 11, lines 40-54

and column 10, lines 59-67) referenced by the Examiner and submit that these sections fail to disclose taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition and using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend.

Henly fails to obviate the deficiencies in the teachings of Phillips. Henly discloses a process for the prediction and the optimization of the output of a plant producing products from incoming materials. Applicants have carefully reviewed the sections (paragraph 0004 and 0012) referenced by the Examiner and submit that these sections fail to disclose taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition and using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend. Instead, these sections relate to a method for the prediction of the properties of and the optimization of a plant's output of products from a source or sources of raw material.

Again, as discussed above, the Examiner has not shown the requisite motivation or suggestion to modify or combine the cited references to reach the present claims. The Examiner must provide objective evidence, rather than subjective belief and unknown authority, of the requisite motivation or suggestion to combine or modify the cited references. *In re Lee*, 61 U.S.P.Q.2d. 1430 (Fed. Cir. 2002). Applicants challenge the Examiner to produce *objective evidence* of the requisite motivation or suggestion to combine the cited references, or remove the foregoing rejection under 35 U.S.C. § 103.

In view of the foregoing deficiencies in the teachings of the prior art, the references cannot establish a *prima facie* case of obviousness of claims 2, 12 and 18.

Accordingly, these claims are believed to be clearly patentable over the cited combination. Their reconsideration and allowance are respectfully requested.

For at least these reasons, among others, the Applicants respectfully request withdrawal of the foregoing rejections under 35 U.S.C. § 103.

### **New Claims**

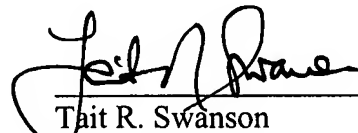
As noted above, the Applicants added new claims 27-28, and believe these claims are in condition for allowance by virtue of their dependence on allowable base claims and by virtue of the additional features they recite. The cited references, taken alone or in hypothetical combination, do not teach or suggest the features of the new dependent claims 27-28. Accordingly, the Applicants respectfully stress that the new dependent claims 27-28 are in condition for allowance.

### **Conclusion**

In view of the amendments and remarks set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



Tait R. Swanson  
Reg. No. 48,226  
FLETCHER YODER  
P.O. Box 692289  
Houston, TX 77269-2289  
(281) 970-4545